

Historic, Archive Document

Do not assume content reflects current scientific knowledge, policies, or practices.

A292.9

So3 Fe

copy 2

U. S. DEPT. OF AGRICULTURE
NATIONAL AGRICULTURAL LIBRARY

MAY 21 1968

CURRENT SERIAL RECORDS

WATER SUPPLY OUTLOOK FOR WASHINGTON

and
FEDERAL - STATE - PRIVATE COOPERATIVE SNOW SURVEYS

UNITED STATES DEPARTMENT of AGRICULTURE...SOIL CONSERVATION SERVICE.

and

DEPARTMENT of WATER RESOURCES STATE of WASHINGTON

Data included in this report were obtained by the agencies named above in cooperation with the U.S. Forest Service, U.S. Geological Survey, National Park Service, and other Federal, State and Private organizations.

AS OF
MAY 1, 1968

TO RECIPIENTS OF WATER SUPPLY OUTLOOK REPORTS:

Most of the usable water in western states originates as mountain snowfall. This snowfall accumulates during the winter and spring, several months before the snow melts and appears as streamflow. Since the runoff from precipitation as snow is delayed, estimates of snowmelt runoff can be made well in advance of its occurrence. Streamflow forecasts published in this report are based principally on a measurement of the water equivalent of the mountain snowpack.

Forecasts become more accurate as more of the data affecting runoff are measured. All forecasts assume that climatic factors during the remainder of the snow accumulation and melt season as they affect runoff will add to be an effective average. Early season forecasts are therefore subject to a greater change than those made on later dates.

The snow course measurement is obtained by sampling snow depth and water equivalent at surveyed and marked locations in mountain areas. A total of about ten samples are taken at each location. The average of these are reported as snow depth and water equivalent. These measurements are repeated in the same location near the same dates each year.

Snow surveys are made monthly or semi-monthly from January 1 through June 1 in most states. There are about 1400 snow courses in Western United States and in the Columbia Basin in British Columbia. In the near future, it is anticipated that automatic snow water equivalent sensing devices along with radio telemetry will provide a continuous record of snow water equivalent at key locations.

Detailed data on snow course and soil moisture measurements are presented in state and local reports. Other data on reservoir storage, summaries of precipitation, current streamflow, and soil moisture conditions at valley elevations are also included. The report for Western United States presents a broad picture of water supply outlook conditions, including selected streamflow forecasts, summary of snow accumulation to date, and storage in larger reservoirs.

Snow survey and soil moisture data for the period of record are published by the Soil Conservation Service by states about every five years. Data for the current year is summarized in a West-wide basic data summary and published about October 1 of each year.

PUBLISHED BY SOIL CONSERVATION SERVICE

D. A. WILLIAMS, Administrator

The Soil Conservation Service publishes reports following the principal snow survey dates from January 1 through June 1 in cooperation with state water administrators, agricultural experiment stations and others. Copies of the reports for Western United States and all state reports may be obtained from Soil Conservation Service, Western Regional Technical Service Center, Room 507, 701 N. W. Glisan, Portland, Oregon 97209.

Copies of state and local reports may also be obtained from state offices of the Soil Conservation Service in the following states:

STATE	ADDRESS
Alaska	P. O. Box "F", Palmer, Alaska 99645
Arizona	6029 Federal Building, Phoenix, Arizona 85205
Colorado (N. Mex.)	12417 Federal Building, Denver, Colorado 80202
Idaho	P. O. Box 38, Boise, Idaho 83707
Montana	P. O. Box 98, Helena, Montana 59715
Nevada	P. O. Box 4850, Reno Nevada 89505
Oregon	1218 S. W. Washington St., Portland, Oregon 97205
Utah	4012 Federal Building, Salt Lake City, Utah 84111
Washington	360 Federal Office Building, Spokane, Washington 99201
Wyoming	P. O. Box 340, Casper, Wyoming 82602

PUBLISHED BY OTHER AGENCIES

Water Supply Outlook reports prepared by other agencies include a report for California by the Water Supply Forecast and Snow Surveys Unit, California Department of Water Resources, P. O. Box 388, Sacramento, California 95802 --- and for British Columbia by the Department of Lands, Forests and Water Resources, Water Resources Service, Parliament Building, Victoria, British Columbia



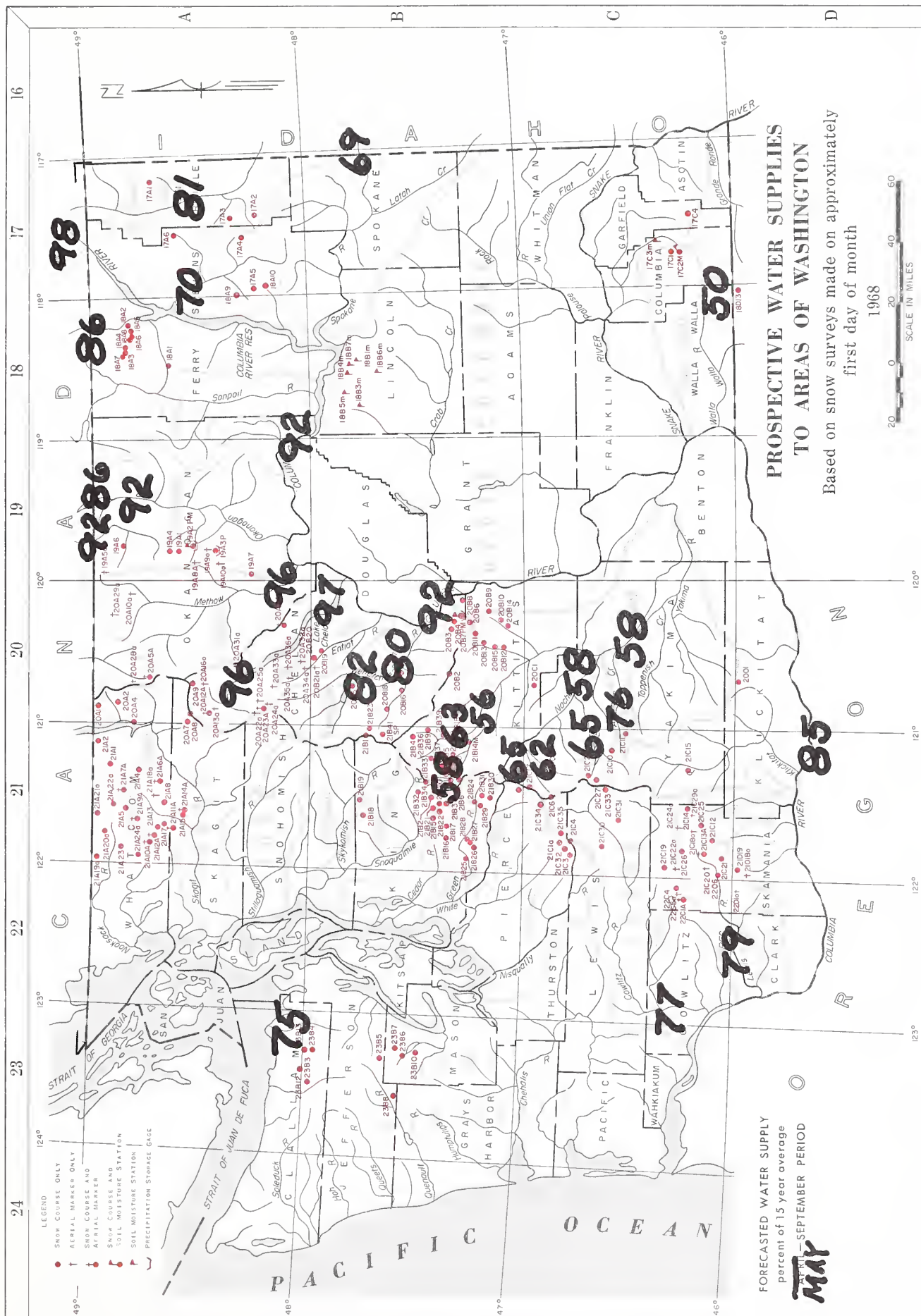
and
FEDERAL - STATE - PRIVATE COOPERATIVE SNOW SURVEYS

D.A. WILLIAMS
ADMINISTRATOR
SOIL CONSERVATION SERVICE
WASHINGTON, D.C.

ORLO W. KRAUTER
STATE CONSERVATIONIST
SOIL CONSERVATION SERVICE
SPOKANE, WASHINGTON

H. MAURICE AHLQUIST
DIRECTOR
DEPARTMENT OF WATER RESOURCES
STATE OF WASHINGTON

SOIL CONSERVATION SERVICE
360 U.S. COURTHOUSE
SPOKANE, WASHINGTON 99201



INDEX to WASHINGTON SNOW COURSES, SOIL MOISTURE STATIONS and PRECIPITATION STORAGE GAGES

[illegible]

WATER SUPPLY OUTLOOK

State of Washington
May 1, 1968

* The water supply outlook for irrigation and power in the State of *
* Washington remains essentially the same as that which was report- *
* ed last month. During the month precipitation generally was below *
* normal and streamflow, likewise, was approximately half of the *
* 15-year average. A result of this cool, dry condition has in- *
* creased, percentagewise, the residual forecasts in a few cases *
* and decreased the forecasts in others. At the present time the *
* snowpack at low and middle elevation snow courses is gone or very *
* deficient while that at the higher elevations is normal and in a *
* few cases above normal. Water supplies will be adequate where *
* reservoir storage is available but should be deficient where dir- *
* ect diversions are relied upon. *

SNOW COVER

A comparison of snow cover is not fully studied as of the first of May because of the predominance of snow courses which were completely bare of snow on May 1. This year a check was made of a few key watersheds to determine how the snowpack would compare with last year and average and the result showed that, percentagewise, the situation is very similar to the April 1 report. The Okanogan and Methow, as well as the Chelan, again have good snow at the higher elevations and are reported to be near normal. Yakima has less than 50% of average of snow cover remaining as does the Cowlitz. The Wenatchee, Lewis, and Spokane have slightly more than half of their normal snowpack for this time of year. In the Puget Sound area the only snow measured is in the Skagit-Baker drainage and those high elevation snow courses indicate a snowpack that is 75% of normal.

RESERVOIRS

The power reservoirs, Coeur d'Alene Lake and Franklin D. Roosevelt Lake, have well below normal amounts of storage as of the first of May; FDR Lake being the lowest since it originally filled. Lake Chelan has nearly twice its normal storage as does Ross reservoir on the Skagit. The irrigation reservoirs in the Yakima drainage have slightly more than normal amounts of water in storage while the two smaller reservoirs in the Okanogan drainage have a little less than normal. There will be no problem with the filling of FDR Lake with the spring runoff although Coeur d'Alene Lake could experience some difficulty in reaching its upper limits with the runoff.

PRECIPITATION

During the month of April only the Upper Columbia drainage in Canada and the northwestern slopes of the Cascades experienced above normal precipitation. All other areas had less than normal and as much as only one-third of normal April rainfall. The highest percentage occurred in the very northern tip of the Columbia drainage and a few isolated high mountain stations in Washington.

SOIL MOISTURE

The continuing dry regime in the lower elevations of Washington as well as the cool weather in the areas of the soil moisture stacks have depleted the soil moisture through natural drainage and transpiration. All of these stations are bare of snow and additional input into the soil mantle will now have to come from rainfall. The soil moisture stacks will continue to dry out until the input of fall rain storms.

STREAMFLOW

During the month of April most streams had a flow that was about half of the 15-year normal; the highest occurring on the Columbia River at Birchbank and the Cowlitz River at Castle Rock. The lowest streamflow again occurred out of the Blue Mountains with the Walla Walla River as measured at Touchet reporting only 20% of normal April outflow. The observed flow at Parker was only 16% but this was due mainly to diversions of the river above the station. Forecasts range from a high of 98% for the May-September period of the Columbia River at Birchbank to a low of 50% for Mill Creek as measured near Walla Walla.

STREAMFLOW FORECAST - MAY 1968

The following summarized runoff forecasts are based principally on mountain snow cover and on the assumption that precipitation and temperature will be near average from the present time to the end of the forecast period. Appreciable deviations from normal of temperature and/or precipitation will correspondingly modify these forecasts.

Basin, Stream and Station	Forecast Runoff 1968	Seasonal Streamflow in Thousands of Acre-Feet					
		% 15-Yr. Avg.	Fore- cast Period	Measured Runoff			15-Yr. Avg.
				1967	1966	1965	1948-62
<u>COLUMBIA BASIN</u>							
<u>Columbia River System</u>							
<u>Columbia River</u>							
at Birchbank <u>1/</u>	41700	98	May-Sep	49840	42575	40419	42518
	32300	98	May-Jul	39220	32820	30110	33007
	21800	97	May-Jun	25570	21876	20365	22472
<u>Columbia River</u>							
at Grand Coulee <u>1/</u>	58300	92	May-Sep	69380	55829	61301	63335
	47800	92	May-Jul	57810	45027	48555	52003
	35100	91	May-Jun	41590	32163	36140	38569
<u>Columbia River</u>							
bl Rock Island Dam <u>1/</u>	64100	92	May-Sep	76490	60694	65579	69730
	52800	92	May-Jul	64270	49296	52352	57384
	38800	91	May-Jun	46810	35478	38637	42595
<u>Columbia River</u>							
at The Dalles, Ore. <u>1/</u>	80600	85	May-Sep	100620	75010	96282	94841
	66100	84	May-Jul	84880	60348	78392	78671
	50800	84	May-Jun	63150	44552	60321	60426
<u>Pend Oreille River System</u>							
<u>Pend Oreille River</u>							
bl. Box Canyon	11800	81	May-Sep		11358	16381	14549
	10700	81	May-Jul		10380	14466	13215
	8800	80	May-Jun		8656	12164	11043
<u>Kettle River System</u>							
<u>Kettle River</u>							
nr. Laurier	1500	86	May-Sep	1753	1184	1464	1754
	1400	85	May-Jul	1720	1131	1371	1654
	1300	85	May-Jun	1580	976	1269	1477

1/ Observed flow corrected for storage in any of the following reservoirs which are above the station: Kootenay Lake, Hungry Horse, Flathead Lake, Pend Oreille Lake, F. D. Roosevelt Lake, Lake Chelan, Coeur d'Alene Lake, Brownlee, Noxon Rservoir and pumpage at F. D. Roosevelt Lake.

Streamflow Forecasts - May 1968 (Cont.)

Streamflow Forecasts - May 1968 (Cont.)							
Basin, Stream and Station	Forecast Runoff 1968	Seasonal Streamflow in Thousands of Acre-Feet					
		% 15-Yr. Avg.	Fore- cast Period	Measured Runoff			15-Yr. Avg.
				1967	1966	1965	1948-62
<u>Kettle River System (Cont.)</u>							
Colville River							
at Kettle Falls	83	70	May-Sep		43	93	119
	72	69	May-Jul		36	81	104
	64	70	May-Jun		31	73	91
<u>Spokane River System *</u>							
Spokane River							
at Post Falls, Ida <u>2/</u>	1550	69	May-Sep		1560	1924	2262
	1490	69	May-Jul		1504	1789	2160
	1360	68	May-Jun		1412	1646	2002
<u>Okanogan River System **</u>							
Similkameen River							
nr. Nighthawk	1430	92	May-Sep	1641	866	1263	1556
	1300	91	May-Jul	1571	803	1167	1441
	1100	90	May-Jun	1360	663	1021	1222
Okanogan River							
at Oroville <u>3/</u>	370	86	May-Sep		158	355	430
	360	85	May-Jul		174	349	428
	340	84	May-Jun		160	347	407
Okanogan River							
nr. Tonasket	1660	92	May-Sep		909	1467	1804
	1470	91	May-Jul		821	1327	1618
	1220	90	May-Jun		667	1153	1350
<u>Methow River System **</u>							
Methow River							
nr. Pateros	1000	96	May-Sep		582	744	1069
	940	95	May-Jul		531	668	987
	790	95	May-Jun		436	566	831
<u>Chelan River System</u>							
Chelan River							
at Chelan <u>4/</u>	1180	97	May-Sep		866	1010	1221
	1030	96	May-Jul		747	872	1070
	770	95	May-Jun		559	652	814

* Forecasts made by Morlan W. Nelson and J. Alden Wilson, Soil Conservation Service, Boise, Idaho.

** These forecasts are based in part upon base flow data especially prepared and furnished for this purpose by the U. S. Geological Survey.

2/ Observed flow corrected for storage in Coeur d'Alene Lake and diversions by Spokane Valley Farms Company and Rathdrum Prairie Canals.

3/ Observed flow corrected for storage and diversions.

4/ Observed flow corrected for storage in Lake Chelan.

Streamflow Forecasts - May 1968 (Cont.)

Basin, Stream and Station	Forecast Runoff 1968	Seasonal Streamflow in Thousands of Acre-Feet					
		% 15-Yr. Avg.	Fore- cast Period	Measured Runoff			15-Yr. Avg. 1948-62
				1967	1966	1965	
<u>Chelan River System (Cont.)</u>							
Stehekin River							
at Stehekin	830	96	May-Sep	970	653	737	861
	700	96	May-Jul	834	543	613	728
	500	95	May-Jun	639	399	448	535
<u>Wenatchee River System</u>							
Wenatchee River							
at Plain	1020	82	May-Sep		913	1110	1238
	910	82	May-Jul		822	991	1108
	690	81	May-Jun		638	778	854
Wenatchee River							
at Peshastin	1360	80	May-Sep		1250	1475	1700
	1210	79	May-Jul		1136	1333	1535
	930	78	May-Jun		888	1056	1191
Stemilt Basin							
nr. Wenatchee	95*	--	May-Sep		132*	132*	--
<u>Yakima River System</u>							
Yakima River							
nr. Martin <u>5/</u>	75	58	May-Sep		94	95	130
	68	58	May-Jul		90	88	118
	55	56	May-Jun		77	77	98
Yakima River							
at Cle Elum <u>6/</u>	480	56	May-Sep	792	648	678	857
	420	55	May-Jul	726	581	608	772
	350	55	May-Jun	619	494	513	645
Yakima River							
nr. Parker <u>7/</u>	890	58	May-Sep		959	1080	1533
	860	57	May-Jul		975	1070	1505
	750	56	May-Jun		877	997	1343
Kachess River							
nr. Easton <u>8/</u>	63	56	May-Sep		79	81	113
	59	56	May-Jul		77	76	106
	50	55	May-Jun		69	68	91

* Thousands of Miners' Inches.

5/ Observed flow corrected for storage in Lake Keechelus.6/ Observed flow corrected for storage in Keechelus, Kachess and Cle Elum Lakes and diversion by Kittitas Canal.7/ Observed flow corrected for storage in Keechelus, Kachess, Cle Elum, Bumping and Rimrock Lakes and diversions by Roza, Union Gap, New Reservation, Old Reservation and Sunnyside Canals.8/ Observed flow corrected for storage in Lake Kachess.

Streamflow Forecasts - May 1968 (Cont.)

Basin, Stream and Station		Forecast Runoff 1968	% 15-Yr. Avg.	Forecast Period	Measured Runoff			15-Yr. Avg.
					1967	1966	1965	1948-62
<u>Yakima River System (Cont.)</u>								
<u>Cle Elum River</u>								
nr. Roslyn <u>9/</u>	280	63	May-Sep		334	349		449
	260	63	May-Jul		310	319		407
	210	62	May-Jun		255	267		332
<u>Bumping River</u>								
nr. Nile <u>10/</u>	90	62	May-Sep		104	111		145
	80	61	May-Jul		96	102		132
	65	61	May-Jun		81	87		106
<u>American River</u>								
nr. Nile	80	65	May-Sep		94	95		122
	73	65	May-Jul		87	87		112
	58	64	May-Jun		72	74		90
<u>Tieton River</u>								
at Tieton Dam <u>11/</u>	160	65	May-Sep		168	184		242
	130	64	May-Jul		144	153		202
	98	63	May-Jun		114	123		155
<u>Naches River</u>								
nr. Naches <u>12/</u>	560	58	May-Sep		604	664		823
	500	57	May-Jul		543	591		740
	400	56	May-Jun		456	496		608
<u>Ahtanum Creeks</u>								
nr. Tampico <u>13/</u>	34	76	May-Sep		30	33		45
	30	75	May-Jul		26	29		40
	25	74	May-Jun		22	25		34
<u>Lower Columbia River System</u>								
<u>Mill Creek</u>								
nr. Walla Walla	11	50	May-Sep		16	13		22
	9	50	May-Jul		12	10		18
	7	47	May-Jun		13	8		15
<u>Lewis River</u>								
at Ariel <u>14/</u>	810	79	May-Sep		934	688		1030
	680	78	May-Jul		798	571		866
	560	78	May-Jun		644	485		720
<u>Cowlitz River</u>								
at Castle Rock <u>15/</u>	1720	77	May-Sep		1933	1593		2236
	1460	77	May-Jul		1663	1320		1902
	1160	76	May-Jun		1299	1069		1526
<u>9/</u>	Observed flow corrected for storage in Lake Cle Elum							
<u>10/</u>	Observed flow corrected for storage in Bumping Lake.							
<u>11/</u>	Observed flow corrected for storage in Rimrock Lake.							
<u>12/</u>	Observed flow corrected for storage in Bumping and Rimrock Lakes and diversions by Tieton, Selah Valley, Wapatox Canals and City of Yakima.							
<u>13/</u>	Observed flow of North and South Forks (combined).							
<u>14/</u>	Observed flow corrected for storage in Lake Merwin, Yale and Swift Reservoirs							
<u>15/</u>	Observed flow corrected for storage in Mayfield Reservoir.							

Streamflow Forecasts - May 1968 (Cont.)

Basin, Stream and Station	Forecast Runoff 1968	Seasonal Streamflow in Thousands of Acre-Feet					
		%	Fore-	Measured Runoff			15-Yr.
		15-Yr. Avg.	cast Period	1967	1966	1965	Avg. 1948-62

OLYMPIC PENINSULA

Dungeness River System

Dungeness River

nr. Sequim	118	75	May-Sep	149	110	158
	94	74	May-Jul	118	88	127
	66	73	May-Jun	81	65	91

RESERVOIR STORAGE - 1000 Acre Feet

BASIN or STREAM	RESERVOIR	USABLE ^{1/} CAPACITY	1968	Measured (May)		
				1967	1966	Normal*
<u>COLUMBIA</u>						
Spokane	Coeur d'Alene Lake	225.1	127.0	172.0	172.8	347.7
Columbia	Franklin D. Roosevelt Lake	5232.0	-284.2	899.1	2786.0	3088.2
Columbia	Banks Lake ^{2/}	761.8	464.3	446.8	401.6	450.0
Okanogan	Conconully Reservoir	13.0	7.4	4.7	1.2	9.1
Okanogan	Salmon Lake	10.5	9.0	3.7	7.6	9.2
Chelan	Lake Chelan	676.1	449.6	42.1	137.6	239.3
<u>YAKIMA</u>						
Yakima	Keechelus Lake	157.8	141.4	109.7	127.8	111.3
Kachess	Kachess Lake	239.0	215.9	181.5	176.9	200.5
Cle Elum	Lake Cle Elum	436.9	385.3	280.3	283.0	328.4
Bumping	Bumping Lake	33.7	15.7	4.7	8.3	21.0
Tieton	Rimrock Lake	198.0	165.0	139.1	119.6	149.9
<u>PUGET SOUND</u>						
Skagit	Ross Reservoir ^{2/}	1202.9	993.0	732.6	571.2	511.2
Skagit	Diablo Reservoir	90.6	88.3	83.2	85.8	85.2
Skagit	Gorge Reservoir	9.8	8.8	8.2	8.2	--

^{1/} Based on Active Storage

^{2/} Less than 15-year record in period 1948-62

* 15-year average 1948-62

SOIL MOISTURE - MAY

Drainage Basin and Station	Number	Elev.	Profile (Inches) :		Soil Moisture Content (Inches) as of May 1		
			Depth	Capacity	1968	1967	1966
<u>CRAB CREEK</u>							
Creston-Kunz	18B1m	2440	48	13.6	7.0	10.8	10.6
Jack Woods	18B3m	2600	48	13.6	9.6	9.6	9.4
Krause	18B4m	2440	48	13.6	8.7	9.1	8.9
Sheffels	18B5m	2360	48	13.6	7.3	8.1	7.6
Sherman	18B7m	2440	48	13.6	8.6	8.1	7.4*
Wheatridge	18B6m	2200	48	13.6	8.6	9.2	7.4
<u>OKANOGAN</u>							
Salmon Meadows	19A2M	4500	48	5.4	4.2	3.7	4.1
Trout Creek	3-M	3600	48	7.3	6.0*	5.4	6.2
<u>YAKIMA</u>							
Domery Flat	21B20m	2200	48	6.9	4.9	4.9	4.9
Lake Cle Elum	21B14M	2200	48	12.8	9.2	9.1	9.2
<u>WALLA WALLA</u>							
Couse	17C3m	3650	48	11.1	7.2	10.5	7.5
Helmerts	17C2M	4400	48	12.0	11.3	11.3	10.8
<u>WENATCHEE</u>							
Upper Wheeler	20B7M	4400	48	12.7	12.0**	11.8	11.6

* April 15 measurement

** April 1 measurement

FALL SOIL MOISTURE

Drainage Basin and Station	Number	Elev.	Profile Depth	(Inches) : Total : Capacity :	Soil Moisture Content (Inches) as of Oct. 1 1967 1966 1965		
<u>CRAB CREEK</u>							
Creston-Kunz	18B1m	2440	48	13.6	4.6	5.0	4.9
Jack Woods	18B3m	2600	48	13.6	5.2	4.3	5.0
Krause	18B4m	2440	48	13.6	4.9	5.1	5.8
Sheffels	18B5m	2360	48	13.6	3.7	3.8	4.0
Sherman	18B7m	2440	48	13.6	3.6	3.7	--
Wheatridge	18B6m	2200	48	13.6	4.0	4.1	4.3
<u>OKANOGAN</u>							
Salmon Meadows	19A2M	4500	48	5.4	1.5	3.0	1.9
Trout Creek	3-M	3600	48	7.3	4.0	3.8	4.1
<u>YAKIMA</u>							
Domery Flat	21B20m	2200	48	6.9	4.8	2.4	1.9
Lake Cle Elum	21B14M	2200	48	12.8	9.1	6.4	6.9
<u>WALLA WALLA</u>							
Couse	17C3m	3650	48	11.1	5.4	5.7	6.0
Helmerts	17C2M	4400	48	12.0	6.7	6.7	6.2
<u>WENATCHEE</u>							
Upper Wheeler	20B7M	4400	48	12.7	5.6	5.7	6.2

PRECIPITATION 1/

Division Averages and Departures

DRAINAGE DIVISIONS	FALL		WINTER		SPRING	
	<u>Sept-Oct. 1967 <u>2/</u></u>		<u>Nov. '67-Mar. '68 <u>2/</u></u>		<u>April '68 <u>2/</u></u>	
	Observed-Departure		Observed-Departure		Observed-Departure	
Columbia in Canada	5.28	+1.25	10.81	-1.78	1.57	+0.05
Pend Oreille - Spokane	5.48	+0.48	15.98	-2.95	1.32	-0.89
Northeastern Washington	2.84	-0.23	9.37	-1.80	0.69	-0.65
Southeastern Washington	2.85	-0.39	10.10	-2.69	0.92	-0.83
Central Washington	8.44	+2.98	25.65	-3.11	0.97	-1.01
North Central Washington	2.33	+0.69	6.11	-0.98	0.32	-0.44
Northwest Slope Cascades	18.96	+6.10	50.96	-1.42	6.54	+0.80
Southwest Slope Cascades	11.43	+2.34	36.56	-5.05	3.63	-0.50

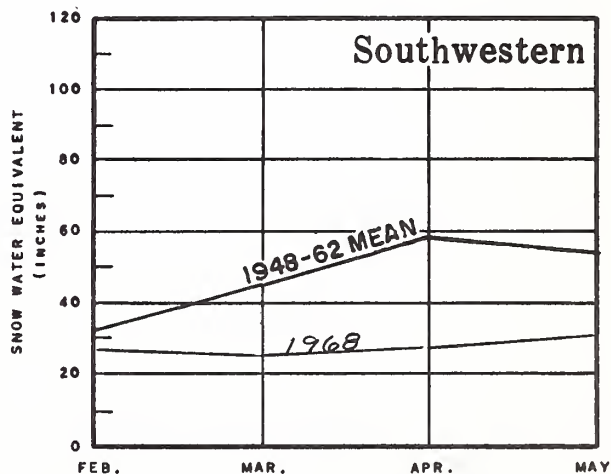
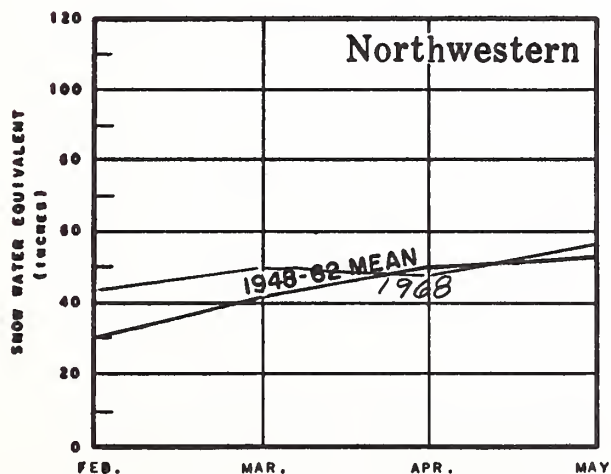
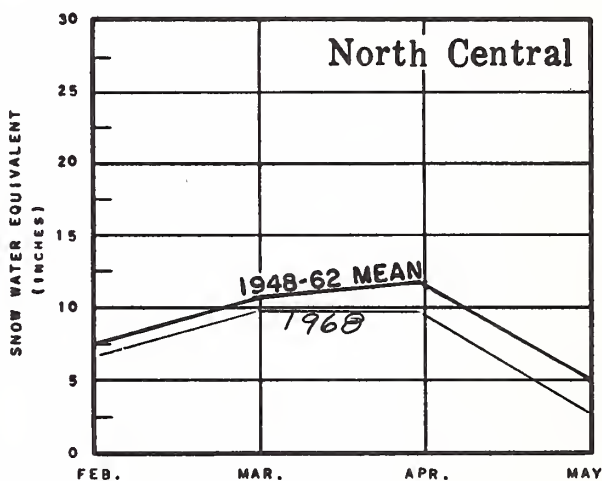
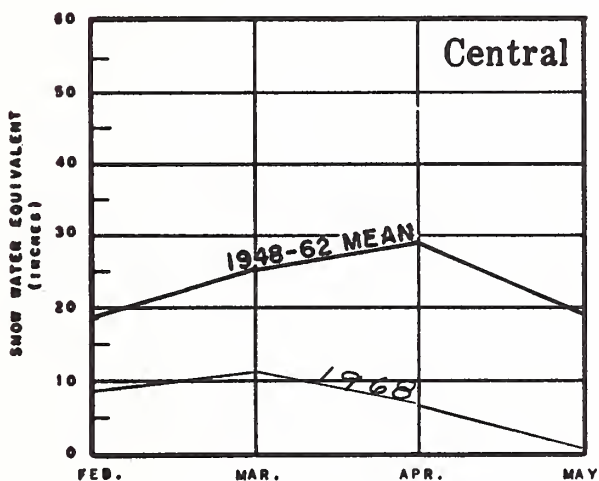
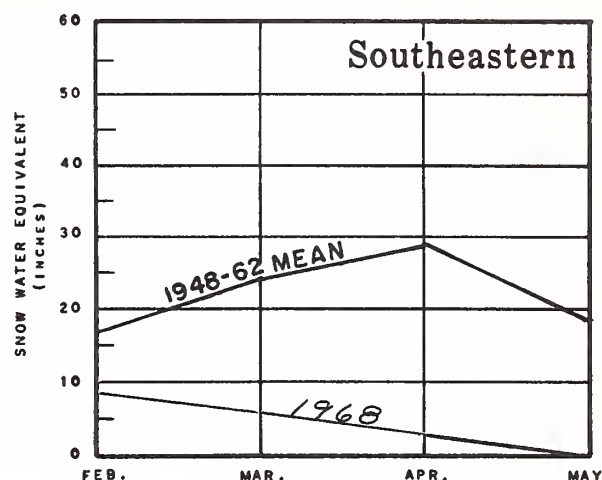
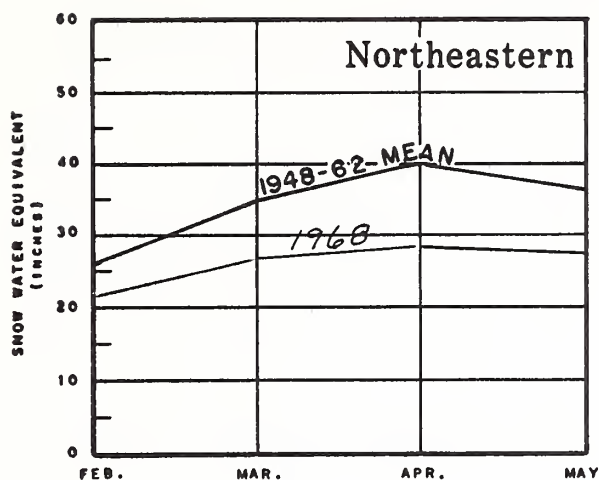
Northeastern Washington	- Lower Spokane, Colville, Sanpoil and lower Kettle drainages.
Southeastern Washington	- Touchet, Tucannon and Palouse drainages.
Central Washington	- Yakima, Wenatchee and Chelan drainages.
North Central Washington	- Methow and Okanogan drainages.
Northwest Slope Cascades	- Puget Sound drainages.
Southwest Slope Cascades	- Lower Columbia drainages.

1/ - Preliminary analysis by U. S. Weather Bureau from data furnished by Meteorological Services of Canada and U. S. Weather Bureau.

2/ - Departure from 15-year (1948-62) drainage division average.

1968

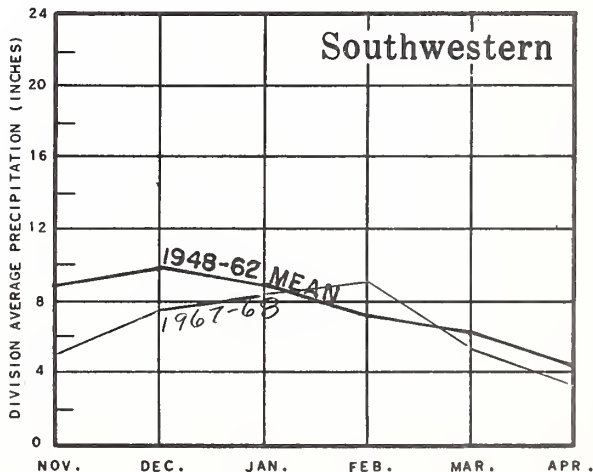
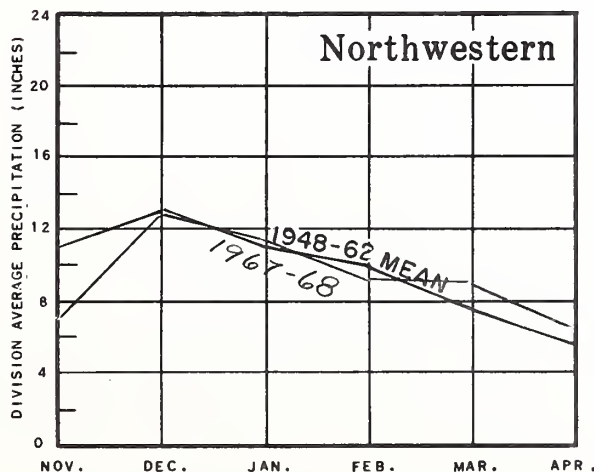
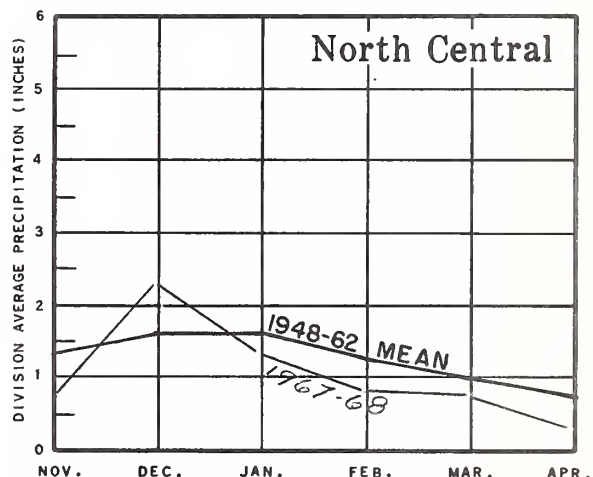
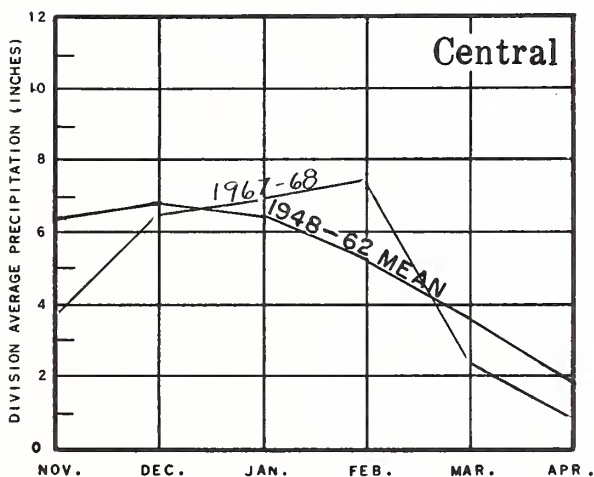
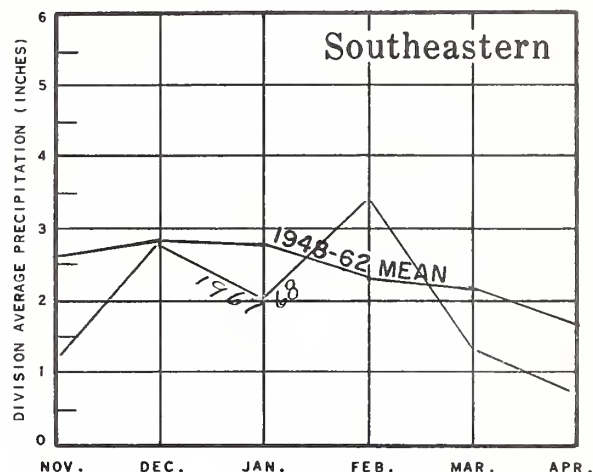
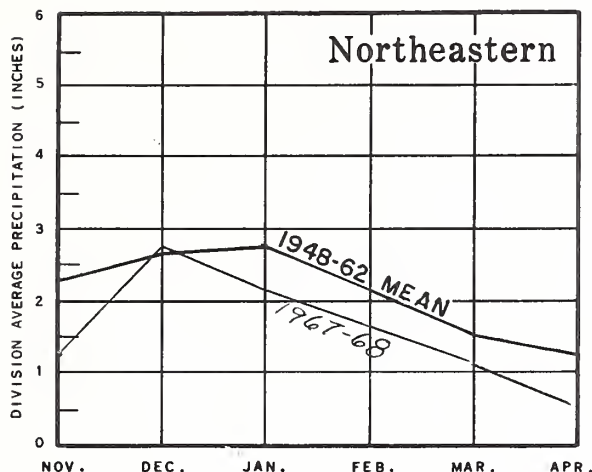
DRAINAGE AREAS



WASHINGTON VALLEY PRECIPITATION

1967-1968

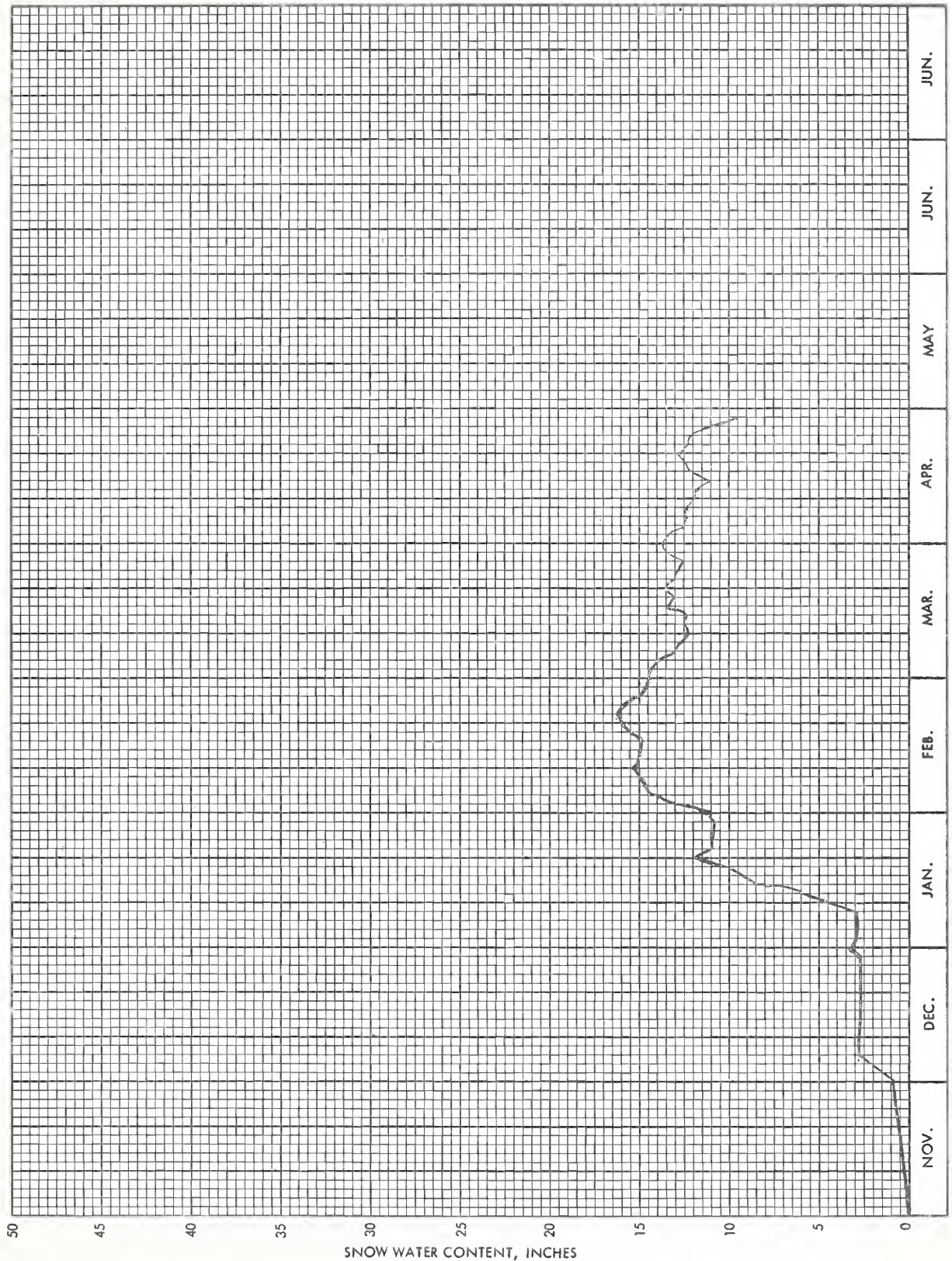
DRAINAGE AREAS



SNOW PILLOW DATA

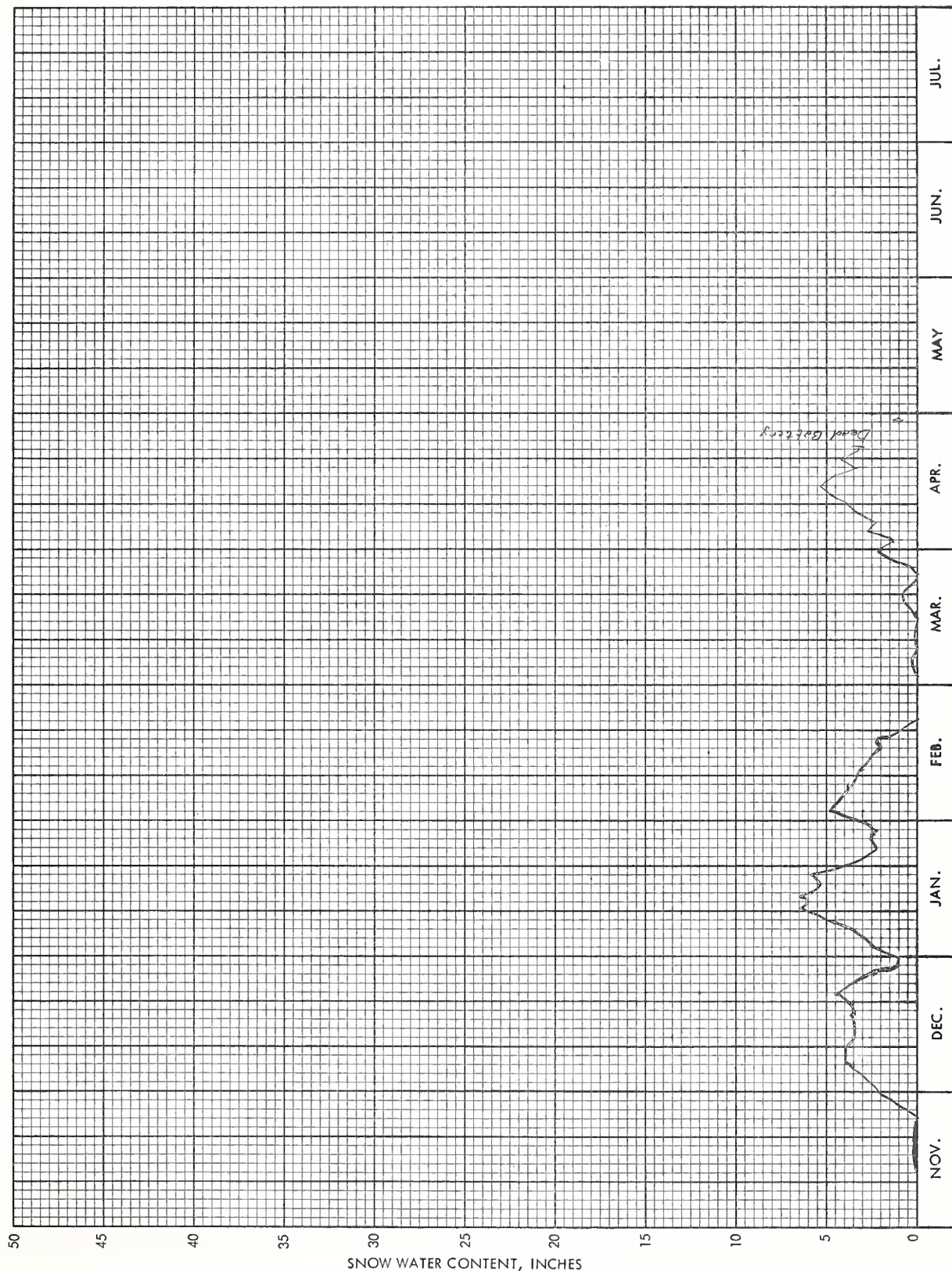
Berne-Mill Creek

Sec. 13 T. 26N R. 14E No. 21B41SP Drainage: Wenatchee
 Lat. 47°46' Long. 121°01' Elev. 3170'



SNOW PILLOW DATA
Cougar Mountain - FS

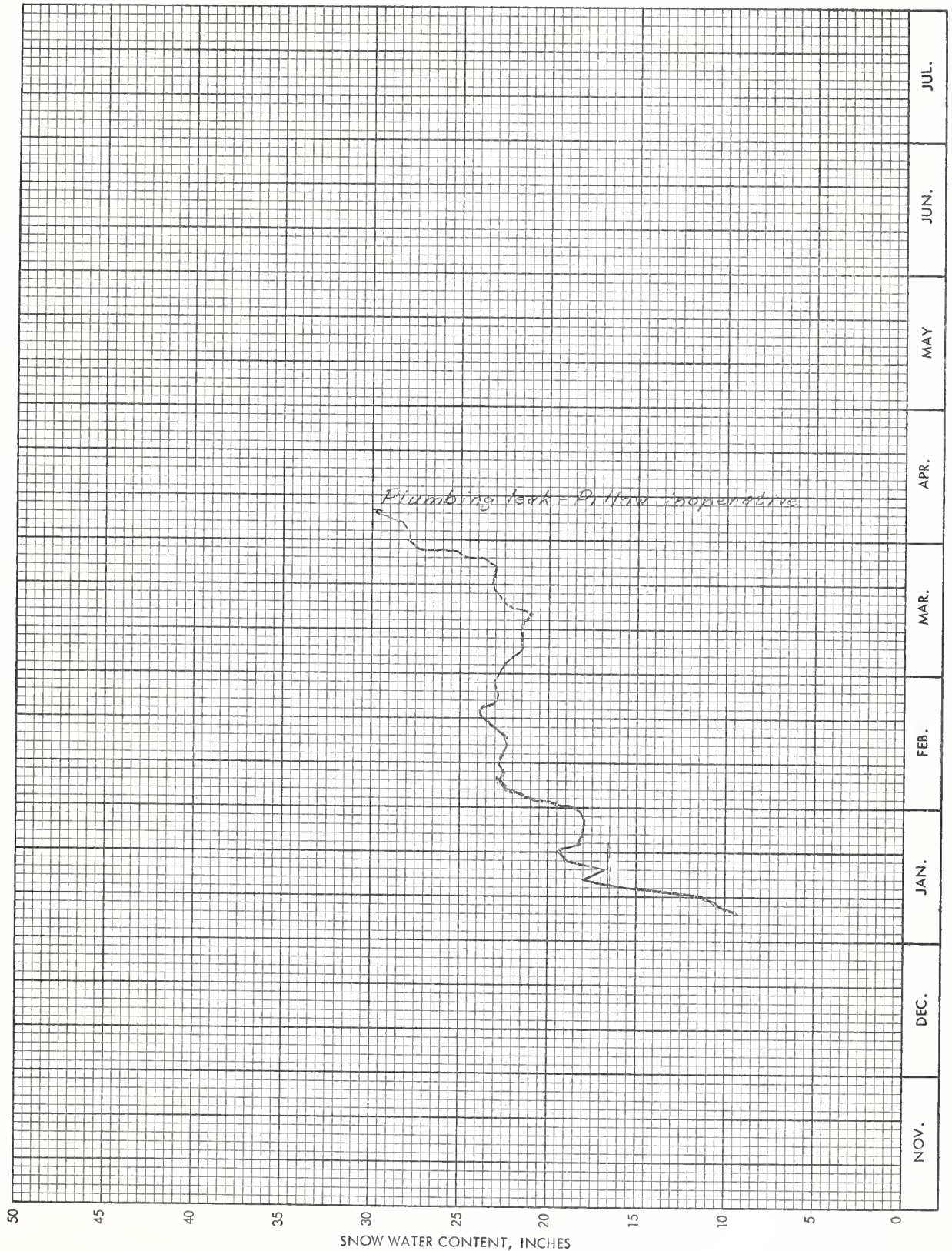
Sec. 28 T. 21 N R. 9E No. 21B42SP Drainage: Green River
Lat. _____ Long. _____ Elev. 3200'



SNOW PILLOW DATA

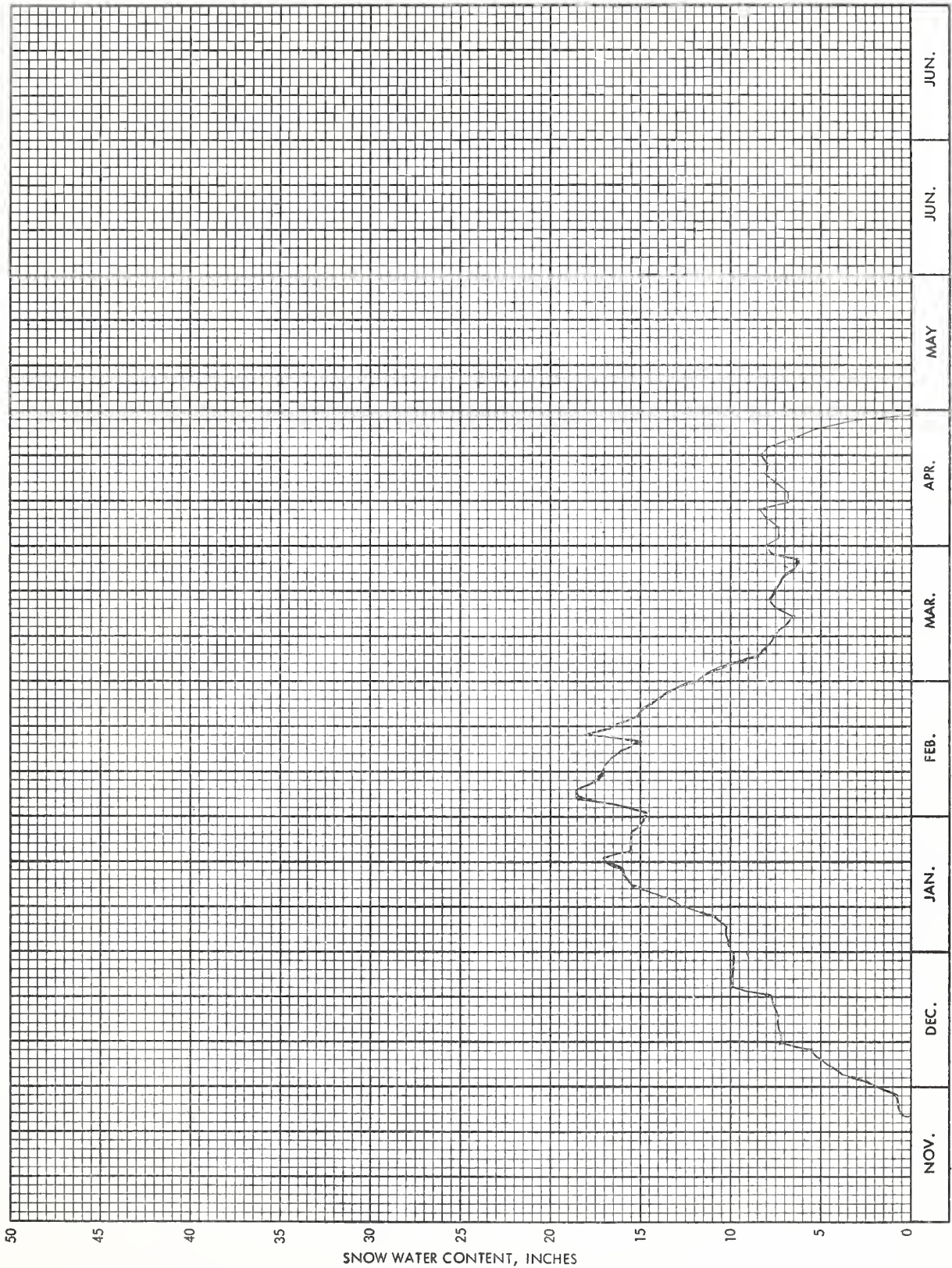
Snowshoe Butte

Sec. 14 T. 20N R. 11E No. 21B43SP Drainage: Green River
 Lat. _____ Long. _____ Elev. 5000'



SNOW PILLOW DATA
EBA Pillow - Snoqualmie Pass

Sec. 4 T. 22N R. 11E No. 21B33SP Drainage: Yakima
Lat. 47° 25' Long. 121° 25' Elev. 3020'



APPENDIX 1
SNOW DATA APRIL 1 to MAY 1, 1968

SNOW

DRAINAGE BASIN and SNOW COURSE			1968			PAST RECORD		
			Date of Survey	Snow Depth (in.)	Water Content (in.)	Water Content (in.)		
Name	No.	Elev.				1967	1966	1948-62 Avg.

U P P E R C O L U M B I A D R A I N A G E

PEND OREILLE RIVER

Baree Creek	15B11	5500	5/1	92	40.4	62.6	39.4	49.1
Baree Midway	15B16	4600	5/1	63	27.2	49.9	24.8	--
Benton Meadow	16A2	2344	4/29	0	0.0	0.0	0.0	0.0*
Benton Spring	16A3	4900	4/29	27	11.8	22.9	12.0	18.2
Boyer Mountain	17A2	5250	4/26	54	23.8	27.4	19.4	24.1*
Brush Creek	14A4	5000	5/1	20	8.3	15.0	7.2	10.7*
Bunchgrass Meadow	17A1	5000	4/29	61	26.0	43.4	23.8	28.6
Hoodo Creek	15C1	6200	5/3	101	43.0	57.6	41.2	50.2*
Lookout	15B2	5250	4/15	85	31.0	41.9	31.5	--
			5/1	67	28.2	42.4	30.0	36.4
Nelson	Canada	3050	4/29	16	6.0	9.0	8.3	5.7**
Schweitzer Bowl	16A6	4500	4/29	51	23.0	37.5	22.2	--
Schweitzer Ridge	16A5	6100	4/29	107	44.8	61.0	47.0	--
Smith Creek	16A1	4800	4/29	98	44.9	61.9	43.1	47.5*
Winchester Creek	17A3	2970	4/26	0	0.0	0.0	0.0	--

KETTLE RIVER

Barnes Creek	Canada	5300	4/25	74	26.1	26.4	21.9	21.1**
Big White Mtn	Canada	5500	4/29	59	20.2	27.2	16.0	--
Boulder Road	18A2	1450	4/29	0	0.0	0.0	0.0	--
Butte Creek	18A3	4070	4/29	16	5.8	8.1	3.4	5.5*
Cabin Creek	18A8	3170	4/29	0	0.0	2.7	0.0	--
Carmi	Canada	4100	4/29	2	0.6	5.0	0.0	--
Farron	Canada	4000	4/25	30	12.0	13.2	6.7	--
Goat Creek	18A4	3595	4/29	0	0.0	0.0	0.0	--
Lower Trapping Cr.	Canada	3050	4/29	0	0.0	0.0	0.0	--
#Monashee Pass	Canada	4500	4/25	49	18.1	17.1	13.5	13.3**
Snow Caps Creek	18A5	2150	4/29	0	0.0	0.0	0.0	--
Snow Caps Trail	18A6	2720	4/29	0	0.0	0.0	0.0	--
Summit G. S.	18A7	4600	4/29	14	5.5	9.0	2.5	6.3*
Upper Trapping Cr.	Canada	5500	4/29	18	6.1	9.4	2.7	--

- * Adjusted 1948-62 average
 ** Average for years of record
 # Not located directly on this drainage

APPENDIX 2

SNOW

DRAINAGE BASIN and SNOW COURSE			1968			PAST RECORD		
			Date of Survey	Snow Depth (in.)	Water Content (in.)	Water Content (in.)		
Name	No.	Elev.				1967	1966	1948-62 Avg.

SPOKANE RIVER

Copper Ridge	16B2	4800	4/29	30	15.3	34.0	18.7	29.3
Forty-nine Meadows	15B3	5000	4/30	41	21.7	32.4	22.8	32.2
Fourth of July Sum.	16B3	3100	5/1	0	0.0	--	0.0	--
Granite Peak	15B13A	6000	4/30	106	47.8	55.4	45.0	--
#Lookout	15B2	5250	4/15	85	31.0	41.9	31.5	--
			5/1	67	28.2	42.4	30.0	36.4
Lost Lake	15B14A	6000	4/30	117	56.4	65.8	49.8	--
Lower Sands Creek	16B1	3400	4/29	18	8.2	16.6	13.4	14.2*
Medicine Ridge	15B4A	6150	4/30	115	52.0	57.4	41.8	--
Outlaw Creek	15B12A	3750	4/30	5	3.0	13.2	8.2	--

OKANOGAN RIVER

Aberdeen Lake	Canada	4300	4/30	6	2.5	4.8	0.7	1.6**
Blackwall Mountain	Canada	6250	Late Report			44.4	34.0	36.8**
Bouleau Creek	Canada	5000	Not Measured			11.6	6.8	7.7**
Brookmere	Canada	3200	4/30	19	6.8	9.0	3.2	5.4**
Clark +	19A8a	7000	4/30	45	18.9	32.4	16.8	--
Enderby	Canada	6250	4/29	121	45.0	51.0	39.8	--
#Freezeout Meadows	20A2	5000	4/29	70	32.1	35.9	29.2	33.7*
Hamilton Hill	Canada	4900	Late Report			20.0	7.1	11.2**
#Harts Pass	20A5A	6500	4/29	125	55.1	56.5	39.5	51.6
Isintok Lake	Canada	5510	4/26	23	6.6	10.7	3.2	--
Lost Horse Mtn.	Canada	6300	4/24	38	10.7	13.5	4.2	9.4**
Lower Esperon Cr.	Canada	4270	Not Measured			12.4	6.2	--
McCulloch	Canada	4200	4/30	4	1.5	5.3	0.9	2.9
Middle Esperon Cr.	Canada	4580	Not Measured			14.0	6.8	--
Missezula Mtn.	Canada	5100	Late Report			10.1	0.0	5.0**
Mission Creek	Canada	6000	4/29	65	23.6	26.1	18.9	21.4**
Monashee Pass	Canada	4500	4/25	49	18.1	17.1	13.5	13.3**
Mount Kobau	Canada	5950	4/28	36	11.5	20.0	8.5	--
Muckamuck +	19A9a	6390	4/30	38	16.0	22.7	10.4	--
Mutton Cr. No. 1	19A1	5700	4/29	16	7.2	20.0	2.4	9.9
Mutton Creek No. 2	19A4	6000	4/29	32	12.3	23.2	10.3	15.3
Nickel Plate Mtn.	Canada	6200	4/24	25	8.1	12.4	4.9	8.4**
Postill Lake	Canada	4500	4/29	23	7.8	8.6	6.1	6.6**

Not located directly on this drainage

** Average for years of record

* Adjusted 1948-62 average

APPENDIX 3

SNOW

DRAINAGE BASIN and SNOW COURSE			1968			PAST RECORD		
			Date of Survey	Snow Depth (in.)	Water Content (in.)	Water Content (in.)		
Name	No.	Elev.				1967	1966	1948-62 Avg.

OKANOGAN RIVER (Cont.)

Rusty Creek	19A3	4000	4/29	0	0.0	2.8	0.0	1.5*
Salmon Meadows	19A2	4500	4/29	8	2.7	11.2	0.0	5.1
Silver Star Mtn.	Canada	6050	4/30	83	35.1	38.8	26.4	25.7**
Starvation Mtn. +	19A10a	6750	4/30	51	21.4	33.5	19.2	--
Summerland Res.	Canada	4200	4/27	20	6.8	10.3	3.9	--
Trout Creek	Canada	4700	4/30	10	3.3	7.3	2.7	4.9**
Upper Esperon Cr.	Canada	5290	Not Measured			25.0	15.6	--

METHOW RIVER

Harts Pass	20A5A	6500	4/29	125	55.1	56.5	39.5	51.6
#Mutton Creek No. 1	19A1	5700	4/29	16	7.2	20.0	2.4	9.9
#Mutton Creek No. 2	19A4	6000	4/29	32	12.3	23.2	10.3	15.3
#Rusty Creek	19A3	4000	4/29	0	0.0	2.8	0.0	1.5*
#Salmon Meadows	19A2	4500	4/29	8	2.7	11.2	0.0	5.1

CHELAN LAKE BASIN

Rainy Pass	20A9	4780	4/29	102	42.7	52.8	32.3	45.1*
Safety Harbor	20A30A	6300	4/25	86	32.6	32.4	23.4	--

ENTIAT RIVER

Brief	20B19	1600	4/27	0	0.0	0.0	0.0	--
Entiat Meadows +	20A33a	4800	4/16	112	42.6	44.5	--	--
			4/29	92	37.4	44.8	--	--
Entiat River Tr. +	20A34a	3150	4/16	26	11.8	22.0	9.8	--
			4/29	12	5.4	12.5	0.0	--
Fox Camp +	20A36a	6510	4/16	164	62.3	58.9	--	--
			4/29	142	57.7	64.6	--	--
Pope Ridge	20B20	4300	4/15	16	7.3	14.1	8.8	--
			4/30	0	0.0	14.4	1.7	--
Pope Ridge S. P.	20B24SP	4300	4/15	xx	6.0	New Course		
Pugh Ridge +	20A32a	6400	4/16	94	35.7	35.3	28.6	--
			4/29	77	31.3	45.2	24.0	--
Snow Brushy +	20A35a	3850	4/16	87	33.0	41.4	25.8	--
			4/29	71	28.8	34.5	14.4	--
Shady Pass	20A37	6200	4/15	77	29.4	New Course		
			4/30	68	27.6			

xx Snow pillow reading

Not located directly on this drainage

* Adjusted 1948-62 average

+ Snow water equivalent estimated from aerial stadia marker

APPENDIX 4

SNOW

DRAINAGE BASIN and SNOW COURSE			1968			PAST RECORD		
			Date of Survey	Snow Depth (in.)	Water Content (in.)	Water Content (in.)		
Name	No.	Elev.				1967	1966	1948-62 Avg.

ENTIAT RIVER (Cont.)

Tommy Creek +	20B21a	5300	4/16	56	21.3	26.6	11.4	--
			4/29	36	14.6	31.9	9.6	--

WENATCHEE RIVER

Berne-Mill Creek	21B23	2925	4/29	29	13.0	25.8	13.7	20.7*
Berne-Mill Creek SP	21B41SP	3240	4/29	15	6.2	--	--	--
Blewett Pass #2	20B2	4270	4/9	11	5.0	--	--	--
			4/19	8	3.6	--	10.1	15.8*
			4/30	0	0.0	11.7	2.7	10.4
Chiwaukum G. S.	20B16	1810	4/30	0	0.0	0.0	0.0	0.0
#Fish Lake	21B4	3371	4/10	42	16.4	32.6	--	--
			4/19	47	20.5	30.4	22.0	--
			4/29	33	12.8	29.6	12.6	26.2*
Lake Wenatchee	20B5	1970	4/9	0	0.0	3.7	--	--
			4/20	0	0.0	0.0	--	--
			4/30	0	0.0	0.0	0.0	--
Leavenworth R. S.	20B17	1127	4/30	0	0.0	0.0	0.0	--
Merritt	20B18	2140	4/30	0	0.0	0.0	0.0	--
Stevens Pass	21B1	4070	4/15	96	31.5	--	49.3	57.0*
			4/29	79	35.2	62.5	43.4	54.8*
Stevens Pass S. Shed	21B45	3700	4/15	59	17.3	New Course		
			4/29	38	17.7			

SQUILCHUCK CREEK

Beehive Springs	20B3	4400	4/29	0	0.0	3.8	0.0	--
Scout-A-Vista	20B4	3400	4/29	0	0.0	2.3	0.0	--

STEMILT CREEK

Jump-Off	20B8	4450	4/30	0	0.0	6.6	0.0	--
Stemilt Slide	20B6	5000	4/29	10	4.6	11.3	5.8	4.6*
Upper Wheeler	20B7	4400	4/29	0	0.0	3.7	0.0	--

CLOCKUM CREEK

Clockum Creek	20B22	5300	4/30	14	6.2	New Course		
Clockum Creek #2	20B23	4300	4/30	0	0.0	New Course		

Not located directly on this drainage

* Adjusted 1948-62 average

+ Snow water equivalent estimated from aerial stadia observation

APPENDIX 5

SNOW

DRAINAGE BASIN and SNOW COURSE			1968			PAST RECORD		
			Date of Survey	Snow Depth (in.)	Water Content (in.)	Water Content (in.)		
Name	No.	Elev.				1967	1966	1948-62 Avg.
<u>YAKIMA RIVER</u>								
#Ahtanum R. S.	21C11	3100	4/30	0	0.0	0.0	0.0	0.0*
Big Boulder Creek	21B9	3200	4/10	0	0.0	10.1	--	--
			4/20	0	0.0	9.9	6.1	--
			4/30	0	0.0	5.6	0.0	5.8*
			4/9	11	5.0	--	--	--
#Blewett Pass #2	20B2	4270	4/19	8	3.6	--	10.1	15.8*
Bumping Lake	21C8	5300	4/30	0	0.0	11.7	2.7	10.4
			4/16	8	4.5	12.2	16.5	15.2*
Bumping Lake New	21C36	3400	5/1	0	0.0	11.6	10.9	10.5
			4/16	21	8.6	New Course		
Cooper Pass	21B36	3300	5/1	0	0.0			
			4/13	29	12.0	29.2	--	--
			4/20	Not Measured		30.0	24.6	--
Fish Lake	21B4	3371	5/1	11	3.7	26.4	17.0	--
			4/10	42	16.4	32.6	--	--
			4/19	47	20.5	30.4	22.0	--
			4/29	33	12.8	29.6	12.6	26.2*
Hyak	21B34	2600	4/12	16	4.2	18.8	--	--
			4/12	0	0.0	14.0	10.8	--
			5/1	0	0.0	8.4	4.8	--
Kachess Dam	21B38	2200	4/10	0	0.0	0.0	--	--
			4/20	0	0.0	0.0	0.0	--
			4/30	0	0.0	0.0	0.0	--
Kachess Peninsula	21B37	2280	4/12	25	5.2	9.2	--	--
			4/20	0	0.0	4.0	12.2	--
			4/30	0	0.0	4.4	5.6	--
Lake Cle Elum	21B14M	2200	5/1	0	0.0	0.0	0.0	--
Morgan Creek	21B40	2320	4/10	0	0.0	0.0	--	--
			4/20	0	0.0	0.0	0.0	--
			4/30	0	0.0	0.0	0.0	--
#Olallie Meadows	21B2	3625	4/9	50	20.1	52.0	48.6	54.3*
			4/22	61	26.4	55.0	43.8	--
			4/29	51	23.5	56.7	44.3	48.9*
Salmon La Sac	21B39	2340	4/12	8	2.2	12.4	--	--
			4/20	0	0.0	10.0	8.6	--
			4/30	0	0.0	4.4	0.0	--
#Satus Pass	20D1	4030	4/29	0	0.0	6.1	0.0	--
Morse Lake	21C17	5400	4/30	102	47.8	83.2	44.8	70.8*

Not located directly on this drainage

* Adjusted 1948 - 62 average

APPENDIX 6

SNOW

DRAINAGE BASIN and SNOW COURSE			1968			PAST RECORD		
Name	No.	Elev.	Date of Survey	Snow Depth (in.)	Water Content (in.)	Water Content (in.)		
						1967	1966	1948-62 Avg.

YAKIMA RIVER (Cont.)

Snoqualmie Pass	21B33SP	3020	4/10	xx	6.5	36.4	--	--
			4/20	xx	8.2	--	38.1	--
			5/1	xx	0.0	28.0	35.4	--
#Stampede Pass	21B10	3000	4/11	52	19.7	53.8	42.6	--
			4/15	61	22.0	--	42.6	--
			4/22	63	22.6	56.7	39.3	--
			4/29	48	23.2	57.1	38.3	47.9
Tunnel Avenue	21B8	2450	4/10	12	4.6	15.6	19.7	--
			4/19	12	3.0	14.9	16.3	25.7
			4/29	4	1.1	13.2	12.1	19.5
White Pass (E. Side)	21C28	4500	4/16	31	10.3	26.7	22.7	31.1*
			4/29	25	10.2	28.4	19.6	31.2*
White Pass (L. Lake)	21C27	4500	4/16	21	8.7	--	--	34.7*
			Not Measured			37.6	21.0	32.6*

AHTANUM CREEK

Ahtanum R. S.	21C11	3100	4/30	0	0.0	0.0	0.0	0.0*
---------------	-------	------	------	---	-----	-----	-----	------

LOWER COLUMBIA DRAINAGEASOTIN CREEK

Spruce Springs	17C4	5700	4/25	39	16.5	24.0	21.6	--
----------------	------	------	------	----	------	------	------	----

KLICKITAT RIVER

Satus Pass	20D1	4030	4/29	0	0.0	0.0	6.1	--
------------	------	------	------	---	-----	-----	-----	----

WHITE SALMON RIVER

Cultus Creek	21C12	4000	4/29	72	31.5	59.3	50.8	52.1*
#Surprise Lakes	21C13A	4250	4/29	69	31.1	61.9	53.5	54.0*

WIND RIVER

Old Man Pass	21D19	3100	4/29	6	2.6	19.3	26.7	8.8*
--------------	-------	------	------	---	-----	------	------	------

- # Not located directly on this drainage
 xx Snow pillow readings
 * Adjusted 1948-62 average

APPENDIX 7

SNOW

DRAINAGE BASIN and SNOW COURSE			1968			PAST RECORD		
Name	No.	Elev.	Date of Survey	Snow Depth (in.)	Water Content (in.)	Water Content (in.)		
						1967	1966	1948-62 Avg.

LEWIS RIVER

Blue Lake +	21C12	4000	4/29	72	31.5	59.3	50.8	52.1*
Bob's Trail	21C21	2200	4/29	0	0.0	15.6	11.0	6.1*
Calamity Ridge +	22D1a	2500	4/29	0	0.0	0.0	0.0	--
Council Pass +	21C18a	4200	4/29	52	22.9	48.2	38.9	35.7*
#Cultus Creek	21C12	4000	4/29	72	31.5	59.3	50.8	52.1*
Divide Meadow +	21C29a	5600	4/29	102	43.9	73.9	56.5	68.7*
Grand Meadow	21C25	3500	4/29	13	6.5	30.1	21.2	23.9*
Lone Pine Shelter	21C26	3800	4/29	76	32.3	56.8	57.2	48.6*
Marble Mountain +	22C5a	3200	4/29	7	3.5	39.5	49.0	--
New Muddy River	22C6	1400	4/29	0	0.0	0.0	0.0	--
Old Man Pass	21D19	3100	4/29	6	2.6	19.3	26.7	8.8*
Plains of Abraham +	22C1a	4400	4/29	123	51.7	92.0	--	83.4*
Smith Creek Road	22C4	2100	4/29	0	0.0	5.7	0.0	--
Spencer Meadow +	21C20a	3400	4/29	0	0.0	25.3	31.0	12.9*
Surprise Lakes	21C13A	4250	4/29	69	31.1	61.9	53.3	54.0*
Table Mountain +	21C24a	4200	4/29	68	29.9	56.9	49.5	46.4*
Timbered Peak +	21D18a	3000	4/29	0	0.0	21.4	6.0	13.2*

COWLITZ RIVER

Ohanapecosh	21C32	2200	Not Measured			--	3.1	--
Pigtail Peak	21C33	5900	4/22	123	51.1	--	53.1	--
#Plains of Abraham +	22C1a	4400	4/29	123	51.7	92.0	--	83.4*
#White Pass (E. Side)	21C28	4500	4/16	31	10.3	26.7	22.7	31.1*
			4/29	25	10.2	28.4	19.6	31.2*
#White Pass (L. Lake)	21C27	4500	4/16	21	8.7	--	--	34.7*
			Not Measured			37.6	21.0	32.6*

PUGET SOUND DRAINAGEWHITE RIVER

#Morse Lake	21C17	5400	4/30	102	47.8	83.2	44.8	70.8*
-------------	-------	------	------	-----	------	------	------	-------

GREEN RIVER

Cougar Mountain	21B42SP	3200	4/15	xx	5.4	28.8	--	--
			4/22	xx	3.2	28.8	--	--
Snowshoe Butte	21B43SP	5000	4/6	xx	29.7	New Course		
			4/29	101	44.1			

Not located directly on this drainage

* Adjusted 1948-62 average

+ Snow water equivalent estimated from aerial stadia marker

xx Snow pillow reading

APPENDIX 8

SNOW

DRAINAGE BASIN and SNOW COURSE			1968			PAST RECORD		
			Date of Survey	Snow Depth (in.)	Water Content (in.)	Water Content (in.)		
Name	No.	Elev.				1967	1968	1948-62 Avg.

GREEN RIVER (Cont.)

Stampede Pass	21B10	3000	4/11	52	19.7	53.8	42.6	--
			4/15	61	22.0	--	42.6	--
			4/22	63	22.6	56.7	39.3	--
			4/29	48	23.2	57.1	39.3	47.9

SNOQUALMIE RIVER

Bandera Air Strip	21B32	1635	4/9	0	0.0	0.0	--	--
			4/20	0	0.0	0.0	0.0	--
			4/28	0	0.0	0.0	--	--
Olallie Meadows	21B2	3625	4/9	50	20.1	52.0	48.6	54.3
			4/22	61	26.4	55.0	43.8	--
			4/29	51	23.5	56.7	44.3	48.9*

SKYKOMISH RIVER

#Stevens Pass	21B1	4070	4/15	96	31.5	--	49.3	57.0*
			4/29	79	35.2	62.5	43.4	54.8*

SKAGIT RIVER

Beaver Creek Trail	21A4	2200	4/29	6	2.2	7.3	4.4	6.6*
Beaver Pass	21A1	3680	4/29	72	31.4	40.6	35.6	37.1*
Devils Park	20A4	5900	4/29	121	51.6	57.4	39.4	49.4*
Freezeout Cr. Trail	20A1	3500	4/29	16	6.0	12.8	4.8	9.4*
Freezeout Meadows	20A2	5000	4/29	70	32.1	35.9	29.2	33.7*
#Harts Pass	20A5A	6500	4/29	125	55.1	56.5	39.5	51.6
Lake Hozomeen	21A2	2600	4/29	10	3.9	5.9	7.6	6.3*
Meadow Cabins	20A8	1900	4/29	0	0.0	0.0	0.0	2.8*
#Rainy Pass	20A9	4780	4/29	102	42.7	52.8	32.3	45.1*
Thunder Basin	20A7	4200	4/29	47	18.0	28.4	20.7	29.3*

BAKER RIVER

Dock Butte	21A11A	3800	Not Measured			96.9	79.3	90.6*
			5/1	136	60.8	94.6	79.7	94.0*
Easy Pass	21A7A	5200	Not Measured			109.5	86.2	--
			5/1	181	85.0	110.2	85.5	113.2*

Not located directly on this drainage

* Adjusted 1948-62 average

APPENDIX 9

SNOW

DRAINAGE BASIN and SNOW COURSE			1968			PAST RECORD		
			Date of Survey	Snow Depth (in.)	Water Content (in.)	Water Content (in.)		
Name	No.	Elev.				1967	1966	1948-62 Avg.

BAKER RIVER (Cont.)

Jasper Pass	21A6A	5400	Not Measured			122.4	97.7	110.2*
			4/30	214	98.8	122.4	98.1	122.0*
Komo Kulshan	21A17	800	Not Measured			0.0	2.3	--
			5/1	0	0.0	0.0	0.0	--
Marten Lake	21A9A	3600	Not Measured			102.8	88.5	97.0*
			5/1	145	64.7	100.2	86.2	100.7*
#Panorama	21A5	4300	4/10	176	70.4	101.6	98.3	--
			4/28	175	73.1	107.1	81.2	--
Rocky Creek	21A12A	2100	Not Measured			41.8	40.5	29.0*
			5/1	41	18.4	39.8	34.1	22.1*
Schreibers Meadow	21A10A	3400	Not Measured			84.6	74.8	74.0*
			5/1	119	56.0	83.8	74.2	79.5*
S. F. Thunder Creek	21A14A	2200	Not Measured			4.5	0.4	--
			5/1	0	0.0	0.0	0.0	--
Sulphur Creek	21A13	1600	Not Measured			13.4	16.3	--
			5/1	0	0.0	8.7	10.0	--
Three Mile Creek	21A15	1600	Not Measured			0.0	0.0	--
			5/1	0	0.0	0.0	0.0	--
Watson Lakes	21A8A	4500	Not Measured			89.8	78.1	85.9*
			5/1	146	63.5	90.7	77.9	90.1*

NOOKSACK RIVER

Panorama	21A5	4300	4/10	176	70.4	101.6	98.3	--
			4/28	175	73.1	107.1	81.2	--

O L Y M P I C P E N I N S U L ADUNGENESS RIVER

Deer Park	23B4	5200	4/28	44	19.1	33.8	28.4	26.6*
-----------	------	------	------	----	------	------	------	-------

MORSE CREEK

Deer Park G. S.	21B13	4850	4/28	11	5.7	22.8	16.9	--
Morse Creek	23B12	5425	4/27	82	37.9	64.0	44.3	--
Cox Valley	23B14		4/29	77	35.9	New Course		

ELWHA RIVER

Hurricane	23B3	4500	4/27	54	20.8	38.4	32.8	31.5*
-----------	------	------	------	----	------	------	------	-------

* Adjusted 1948-62 average

Not located directly on this drainage

Agencies Assisting with Snow Surveys

GOVERNMENT AGENCIES

Canada:

Department of Lands, Forests and Water Resources,
Water Resources Service, British Columbia

States:

Washington State Department of Water Resources
Washington State Department of Natural Resources

Federal:

Department of the Army
Corps of Engineers
U. S. Department of Agriculture
Forest Service
U. S. Department of Commerce
Weather Bureau
U. S. Department of the Interior
Bonneville Power Administration
Bureau of Reclamation
Geological Survey
National Park Service

PUBLIC AND PRIVATE UTILITIES

Chelan County P.U.D.
Pacific Power and Light Company
Puget Sound Power and Light Company
Washington Water Power Company

OTHER PUBLIC AGENCIES

Okanogan Irrigation District
Wenatchee Heights Irrigation District

MUNICIPALITIES

City of Walla Walla
City of Tacoma
City of Seattle

Other organizations and individuals furnish valuable information for snow survey reports. Their cooperation is gratefully acknowledged.

UNITED STATES DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE
ROOM 360, FEDERAL OFFICE BLDG.
SPOKANE WASHINGTON 99201

OFFICIAL BUSINESS

POSTAGE AND FEES PAID
U. S. DEPARTMENT OF AGRICULTURE

FIRST CLASS MAIL

FEDERAL - STATE - PRIVATE
COOPERATIVE SNOW SURVEYS

Furnishes the basic data
necessary for forecasting
water supply for irrigation,
domestic and municipal water
supply, hydro-electric power
generation, navigation,
mining and industry

*"The Conservation of Water begins
with the Snow Survey"*